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**ROTATABLY RETRACTABLE IMAGE DISPLAY SYSTEM**

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## **ROTATABLY RETRACTABLE IMAGE DISPLAY SYSTEM**

### **FIELD OF THE INVENTION**

The invention relates generally to the field of displays and display  
5 enabled devices and, more particularly, to such devices having an arcuate-shaped  
rotatable enclosure that holds a display which, when retracted, is safely hidden and  
protected from viewing. This system of the present invention, when rotatably  
retracted, both removes power from the display or system, and protects the display  
screen. The rotatable arcuate-shaped display enclosure comprises an extremely  
10 safe and padded surface; the surface having no injurious portions making the use  
of this implementation highly desirable in aircraft, automobiles and consumer  
devices for the prevention of injuries to a user. There exists no sharp edges or  
flimsy flat panels to break. When the display is extracted from the arcuate-shaped  
housing the display displays normally, but is still recessed and still possesses all  
15 the afore properties. The implementation improves robustness, safety and  
maintenance costs that make this display system especially advantageous.

### **BACKGROUND OF THE INVENTION**

Display systems are currently available for permitting viewing of  
20 images thereon. They are commonly used in automobiles such as police cars, and  
aircraft for showing movies and the like. Such displays are available from a  
number of sources including Sanyo and Sony of Japan, and Philips in the  
Netherlands. Displays are also commonly used in laptop computers from a variety  
of manufacturers such as IBM. These types of displays demonstrate extreme  
25 drawbacks for many mobile applications in that they include sharp square edges  
which are unsafe in an accident and generally delicate if not carefully retracted  
into a closed position.

Although these currently available technologies are demonstrated  
as being satisfactory for rudimentary consumer purposes, they are not acceptable  
30 for use in value applications such as automobiles and aircraft where safety and  
ruggedness and low service costs are necessary and desirable. Therefore, a need

exists for providing improved retractable display systems that are acceptable for widespread commercial adoption.

### **SUMMARY OF THE INVENTION**

5                   The present invention is directed to overcoming one or more of the problems set forth above. Briefly summarized, according to one aspect of the present invention, the present invention resides in a system for displaying images comprising a base; which contains a movable, arcuate-shaped display receptacle that rotates into and out of the base, and a display attached to the receptacle so that  
10   the display is visible when the receptacle is rotated from the receptacle and the display is partially or entirely not visible when the receptacle is rotated into the base.

                  The above and other objects of the present invention will become more apparent when taken in conjunction with the following description and  
15   drawings wherein identical reference numerals have been used, where possible, to designate identical elements that are common to the figures.

### **Advantageous Effect Of The Invention**

                  The present invention has the advantage of providing safe, robust  
20   and low maintenance cost viewing in a relatively small device. It also includes the ability of viewing when rotatably extracted, and not being viewed when rotatably retracted. Extreme safety is achieved by virtue of the arcuate-shaped cylindrical design.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

25                   Fig 1 is a perspective view of an arcuate-shaped display tube and its respective arcuate-shaped receptacle;

                  Fig. 1a is a perspective view of system such as a PDA or computer with the arcuate-shaped display receptacle rotated into the base;

30                   Fig. 1b is a perspective view of system such as a PDA or computer with the arcuate-shaped display receptacle rotated out of the base;

Fig. 2 is a rear perspective view of a chair such as might be found in commercial aircraft or an automobile with an arcuate-shaped display as part of the headrest with the arcuate-shaped display receptacle rotated into and out of its base;

5 Fig. 3a is a side view of a ceiling mounted display in front of a chair showing the arcuate-shaped display rotated into its base; and

Fig. 3b is a side view of a ceiling mounted display in front of a chair showing the arcuate-shaped display rotated out of its base.

10 **DETAILED DESCRIPTION OF THE INVENTION**

In the following description, the present invention will be described in the preferred embodiment as a system displaying images. The invention refers to a safe, robust and low maintenance viewing system that can be part of a small device. In particular the display is protected against accidental dropping when  
15 used in a PDA or a computer system and an object or person striking it when used in a system in a commercial or consumer vehicle. In the latter case this provides protection for the display as well as users.

Referring first to Fig. 1, a drawing of an arcuate-shaped display tube  
20 10 is represented upon which a display 20 is attached. The attached display 20 can be constructed from a number of technologies such as LCD or Organic LED'S, and is displaced upon a flat section 30 of the display tube 10. The flat section 30 can be rotated about the two rotational members 40. This configuration allows the display 20 to be rotated into an arcuate-shaped base 50 and rotational member receptacles 60.

25 Referring now to Fig. 1a, a consumer device such as a PDA 70 is shown and is represented in a manner in which a display is rotated into the PDA base 80, representing a closed position.

Referring next to Fig 1b, the display 20 is rotated out of the PDA  
30 base 80 and represents an open and operational condition. When closed, the display 20 is protected and through the use of an automatic off/on switch (not shown), power is removed by being actuated at some predetermined position

within the rotation of the arcuate-shaped tube **10**. When the display **20** is rotated to the open position, determined by the aforementioned predetermined position, the power is automatically turned on and the display **20** is ready for viewing.

Referring to Fig. 2, seen is an embodiment where the arcuate-shaped display receptacle **50**, (from Fig. 1) is designed to be part of the headrest **90** of a chair **100** such as might be found on an airplane, train, or bus. The headrest **90** appears as one continuous piece when display is rotated into the base but upon rotation away from the base the person sitting behind the chair is able to view a high quality display **110**. Simply rotating the display turns it off and with no sharp edges provides a supreme measure of safety. It is known that sharp edged interior surfaces contribute to severity of injuries when passengers accidentally fall or are thrust into these surfaces. Therefore, removal of the sharp edges will result in reduced severity of injuries.

Referring to Fig. 3a is an embodiment wherein a high quality display **110** is mounted above a person **120** as for example in an airline seat **130**. Rotating the arcuate-shaped tube **10** (from Fig. 1), allows the person **120** to align the high quality display **110** for optimum viewing as shown in fig 3b. Note that in current embodiments on airplanes, displays are often rectangular shaped and hazardous wherein the current embodiment provides additional passenger safety and robustness.

The invention has been described with reference to a preferred embodiment. However, it will be appreciated that variations and modifications can be effected by a person of ordinary skill in the art without departing from the scope of the invention.

**PARTS LIST**

10	arcuate-shaped display tube
20	display
30	flat section
40	rotational members
50	arcuate-shaped base (display receptacle)
60	rotational member receptacles
70	PDA
80	PDA base
90	headrest
100	chair
110	high quality display
120	person
130	airline seat